
Report: hw3

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Description:

I have done the homework by adding 3 new functions into the program in order to fulfill the qualifications of the homework instruction. I found that I can write the program in the faster and clean way by using function. The 3 new functions added is meant to shorten the codes and also make the mindset to be easy to understand.

Code:

```
1  /*****
2      Student Number: F74045018
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4      Way of Compiling: gcc -o hw3 hw3.c
5      Way of Executing: ./hw3 N P
6      Function of the Program: A changed version of hw2. there
are 3 new functions used to execute the program.
7      To play the game MASTER MIND by determining how many
numbers that you guess are correct and with right position
of the answer that set by the program and how many numbers
that you guess are correct but not with right position of the
answer that set by program.
8      Updated Date: 2015.11.4
9  *****/
10
11 #include<stdio.h>
12 #include<stdlib.h>
13 #include<time.h> //to set a random number
14 #include<string.h> //to check the length of the input
integer
15
16 void functionA(int t[],int a,int n )//to set the answer
randomly and also make sure that the integer of the answer
didn't repeat
17 {
```

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18     t[a]=((rand()%n)+1);
19 }
20
21 void functionB(int g[],int b, int c)// to separate a
N-digit number to 'N' number ans put into array
22 {
23     g[b]=c%10;//take the remainder and put into the array
24 }
25
26 int functionC(int q,int r,int s)//function of showing the
result to player
27 {
28     if (q!=r)
29     {
30         s=0;
31         printf("Please try again");
32         printf("\n");
33         printf("YOUR ANSWER:");
34     }
35     if (q==r)
36     {
37         s=1;//markings of there are 'N' of 'H' and the
answer is correct
38         printf("BINGO!!!!!!");
39         printf("\n");
40         return 0;
41     }
42
43 }
44
45 int main(int argc,char *argv[])
46 {
47     int H,X,N,P,Lp,Ln,i,j,t,input,g,m,x,y;
48     Ln=strlen(argv[1]); //Ln=the length of input N
49     Lp=strlen(argv[2]); //Lp=the length of input P
50     if (Lp!=1||Ln!=1) //to check that if the command
agruement list is not single digit
51     {

```

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52     printf("the command argument list is larger than
1-9.\n");
53     return 0;
54 }
55
56 //to typecast the strings to integer
57 N=atoi(argv[1]);
58 P=atoi(argv[2]);
59
60 if(N==0||P==0) //the integer '0' is not accepted
61 {
62     printf("The input of N or P is not valid.\n");
63     return 0;
64 }
65
66 if (P>N){ //the number of positions can't larger than
the number of integer to play with
67     printf("since P>N,the program is not work,plaese input
correctly.\n");
68     return 0;}
69
70     printf("The number of integer to play with:%d\nThe
number of positions: %d\n",N,P);
71
72 //to initialise the array to 0
73 int answer[100]={0};
74 int yo[100]={0};
75 //to set the answer randomly and also make sure that
the integer of the answer didn't repeat
76 srand((unsigned)time(NULL));
77 for(i=1;i<=P;i++)
78     functionA(answer,i,N);
79
80 for (i=1;i<=P;i++)//make sure that the integer of the
answer didn't repeat
81 {
82     t=0;
83     while (t==0)

```

```

84         {
85             t=1;
86             for (j=1;j<i;j++)
87                 {
88                     if (answer[i]==answer[j])
89                         {
90                             answer[i]++;//when there are numbers
repeated, number in array 'answer[i]'will plus to make it
different from others
91                             if (answer[i]>N)
92                                 answer[i]=1;
93                             t=0;
94
95                         }
96                 }
97             }
98         }
99     printf("ANSWER:");
100
101     for (i=1;i<=P;i++)
102         printf("%d",answer[i]);
103     printf("\n");
104     int guess[100]={0};
105     //user input the answer and program allocate the unput
into array
106     printf("YOUR ANSWER:");
107     g=0;//When the answer of user guess is not exactly
correct, there is a marking that let the loop to continue and
user.
108     while(g==0)
109     {
110         for (x=1;x<=P;x++)
111             yo[x]=0;
112         scanf("%d",&input);//let the users to guess
113
114         for(m=P;m>0;m--)//because the integer divided
from the 'input' have been reversed so the order of the loop
is also reversed

```

```

115     {
116     functionB(guess,m,input);
117     input=input/10;//input divide by 10
118     }
119
120
121     H=0,X=0;//to initialise the variables to 0
122     for(i=1;i<=P;i++) //process to calculate the
123     {
124         y=0; //marking that 'i'th arrays have a 'H'
125         if(answer[i]==guess[i]) //to calculate H by
determining the number of 'i' in both array are the same
126         {
127             y=1;
128             H=H+1;
129         }
130         for(j=1;j<=P;j++)
131         {
132             if (answer[i]==guess[j] && y==0)//to
calculate X by determining that the 'i'th of both arrays have
no marking 'y'
133             {
134                 X=X+1;
135
136             }
137         }
138     }
139
140
141     printf("There are %dH and %dX.\n",H,X);//the
number of 'H's and 'X's calculated is shown
142
143     functionC(H,P,g);
144     /*if (H!=P)
145     {
146         g=0;
147         printf("Please try again");
148         printf("\n");

```

```

149         printf("YOUR ANSWER:");
150     }
151     if (H==P)
152     {
153         g=1;//markings of there are 'N' of 'H' and the
answer is correct
154         printf("BINGO!!!!!!");
155         printf("\n");
156     }
157     */
158     if (H==P)
159     return 0;
160 }
161 return 0;//the program ends.
162 }

```

Compilation:

```
gcc -o hw3 hw3.c
```

Execution:

```
./hw3
```

Output:

```

The number of integer to play with:5
The number of positions: 4
ANSWER:2513
YOUR ANSWER:2555
There are 2H and 0X.
Please try again
YOUR ANSWER:2115
There are 2H and 1X.
Please try again
YOUR ANSWER:2513
There are 4H and 0X.
BINGO!!!!!!

```